

Hobbies

WEEKLY

November 29th, 1950

Price Fourpence

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DESIGN SHEET FOR SERVIETTE RINGS AND BOX

Vol. III No. 2874

A 2ft. MODEL LUGGAGE TRUCK

We give this week another interesting little toy that can be easily and cheaply made up. This little hand truck should afford the youngsters endless fun. It is really a porter's hand truck and is a proper little miniature, large enough to be able to run all over the room collecting up 'luggage' and depositing it where wanted.

A Sturdy Toy

Such a toy as this requires to be built sturdily so it will stand quite a lot of handling and heavy usage. The truck when made up is over 2ft. long and is fitted with a pair of well-turned hardwood wheels 4ins. in diameter. These wheels can be bought from Hobbies at 1/6 per pair.

In commencing to make the truck the two main handles will first be prepared. They are each 2ft. long and cut from 2in. wide stuff $\frac{1}{2}$ in. or $\frac{3}{4}$ in. thick. Square off the ends of the two pieces, and then, taking up one of them, proceed to mark off the positions of the recesses, as shown in Fig. 1. Cut down on the lines with a tenon saw to $\frac{1}{2}$ in. deep and clean out the wood with a chisel. Or, perhaps, the fretsaw frame fitted with a coarse saw would do the latter job more cleanly.

Handle Shaping

The shape of the actual handles should be carefully studied from the illustration and the outline made direct on the wood and then cut with the fretsaw. Round off all the edges with a rasp and file and

finish up to make a smooth handle with coarse and fine glasspaper. At 1in. distant from the square end of the piece and on the plain and uncut edge, a semi-circular recess should be made with the rasp and file, as shown, ready for the $\frac{1}{2}$ in. axle bar which will later be put through.

Now lay this finished handle or rail upon the other plain piece and mark off the recesses along the top edge and also mark round the shape of the handle, and finish this section off exactly as the first one.

Cross Rails

The next pieces to prepare are the cross rails holding the two handle rails together. Mark and cut three pieces 10ins. long by 2ins. wide by $\frac{1}{2}$ in. thick and round off all the corners and then bore

four holes in each to receive the flat-headed screws.

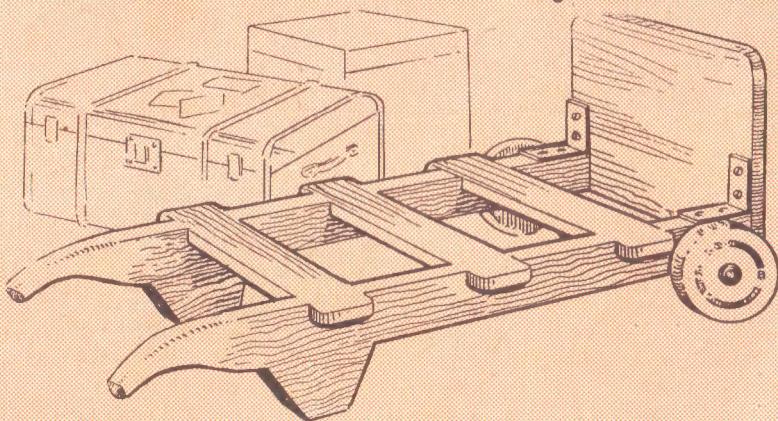
The distance these holes will be made from the ends will be $\frac{1}{2}$ in. to the centres of them, thus making the handles when screwed on 8ins. clear width inside. The holes should all be countersunk and the screws driven in with their heads flush with the wood strips. Fig. 2 shows clearly how each cross rail will appear when fixed on.

Bearers

The bearer brackets which hold the axle are two shaped pieces 3ins. long by $\frac{1}{2}$ ins. wide and $\frac{1}{2}$ in. thick, and one end of each is cut to a slope, as shown at (A) Fig. 3. The pieces are glued to the ends of the handles and a long screw put into the shaped ends of each to give added strength.

The hole for the axle bar may next be completed, and made perfectly circular and smooth, $\frac{1}{2}$ in. in diameter. It would be quite worth while taking the trouble to make two bushes or washers from thin brass bent round and inserted in the holes to make the axle run more easily than it otherwise would in the plain wood.

The axle bar consists of a length of $\frac{1}{2}$ in. hardwood rod, and allowance must be made for a good clearance between



wheel and rail, so that the former work easily. The upright front board which holds the luggage in place on the platform is next made.

This consists of a plain piece of board about $\frac{1}{2}$ in. thick and 9 ins. square, the two

centres, but it will, doubtless, be necessary to enlarge these to the required size to fit tightly on to the axle bar.

Two shaped feet will next be added, one to each handle to hold them clear of

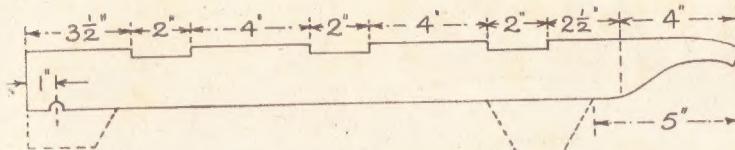


Fig. 1—Side view of handle with dimensions and shaping

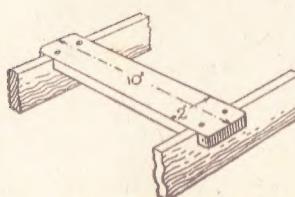


Fig. 2—The cross rails

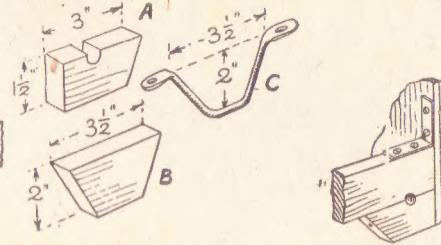


Fig. 3—Bearers on foot shapes

Fig. 4—Angle plates

top corners being rounded off and made smooth. Screws will run through the board into the ends of the handle rails, and to stiffen up this fixing, two metal angle plates will be added, as shown in the detail in Fig. 4. The wheels as supplied have holes made in their

the ground. At (B) in Fig. 3 the size and shape of one foot is given, and, having cut one to shape, the second one can be accurately outlined by drawing round it. The proper position of the foot is given in the dotted lines in Fig. 1. Glue the feet on and drive in nails or screws

Separating Perspex

I WOULD like to know of a preparation to unstick Perspex without damage to either face. (W.H.G.—St. Albans).

WE are not aware of any preparation that will unstick Perspex. It happens that the solvent which would soften the cement, also eats away the material as well. About the best method is to saw through the joint with a fret-saw, if practicable, if not, with a thin bladed hacksaw. The remains of the joint can then be filed away and a new joint made. Some little loss of material results, but it is about the best way to do the job.

Oxydising Brass

CAN you tell me the correct method to use for producing an oxidised finish on brass? (N.F.J.—Wandsworth).

TO oxydise or bronze brass—that is, to produce a dark blue-black colour thereon—you will need a small quantity of bronzing acid which you purchase at small cost from Gedge & Co., 88 St. John St., Clerkenwell, E.C.1. The bronzing is done by first polishing the brass, then making it mechanically clean and absolutely free of any trace of grease. This is vital, as even handling the brass with the bare hand will show up finger prints on the finished work. Boiling in soda water, followed by washing in clean hot water, and drying off by rubbing with clean rag, will generally suffice. Handle the brass only by clean linen cloths (not fluffy kinds), then put a little of the acid in a clean china saucer, and apply it with a clean

swab of wadding or linen. The brass will at once turn blue-black in colour, but continue applying the acid until all is a uniform colour. Rinse in clean warm water and wash thoroughly, dry off in gentle heat; polish with a clean rag and then apply a coat of clear lacquer. The acid is very poisonous, as are the fumes, so avoid breathing any of it, and do the job in a well ventilated place. Take care also not to allow the acid to splash on to the handle or body.

Glue Pot Hint

WHAT can I do to prevent glue from caking to the side of the pot? (W.E.—Islington).

THERE is no way of preventing glue from adhering to the sides of the glue pot, but while the glue is hot, you can readily scrape off the semi-liquid glue with a hot steel blade, such as a knife, and let it melt with the rest of the glue.

Invisible Ink

I FIND that if I write on paper with orange juice, it remains invisible until exposed to heat. Could you tell me if it is possible to use some other means of doing this without heat? (E.C.G.—N. Kensington).

THERE are many ways of writing with the so-called invisible ink, which becomes visible under heat or when subjected to a suitable re-agent. For example, characters written with a weak solution of gall, only become visible when a weak solution of copperas is applied. Writing with rice water

through the sloping end of the feet into the rails.

As an alternative to the feet described above, they may be made from stout wire, two pieces about 9 ins. or 10 ins. long being cut off and bent up to the shape given at (C) in Fig. 3. The ends of the wires are flattened by

CUTTING LIST, Etc.

1 piece—	24 ins. by 4 ins. by $\frac{1}{2}$ in. or $\frac{3}{8}$ in.
1 piece—	11 ins. by 8 ins. by $\frac{1}{2}$ in. or $\frac{3}{8}$ in.
1 piece—	9 ins. by 9 ins. by $\frac{1}{2}$ in. or $\frac{3}{8}$ in.
pair wheels—	4 ins. diameter.
1 piece	$\frac{1}{2}$ in. round rod—12 ins. long.
1 pair	angle plates—2 ins.

hammering, and holes then drilled to take round-head stout screws.

Clean up all the wood surfaces, excepting the wheels, of course, which are already nicely painted and finished. Brush on a coat of clear varnish, allowing this to thoroughly harden before again handling the toy.

If preferred, the toy may be painted in bright colours, two coats being given to give a good finish. Some 'light' luggage can easily be made from card packing boxes or cartons which are now commonly used by provision merchants or confectionery stores. These could be covered with light brown paper and stiffened with card where necessary. (299)

becomes visible when developed by an application of iodine. Chemical solutions which become visible only when heated, and can be used for writing, include very dilute solutions of the mineral acids and common salt; solutions of chloride of cobalt, and of nickel. Also equal parts of sal ammoniac and sulphate of copper, act in the same way.

Dynamo Weakness

I HAVE a second-hand dynamo and it isn't lighting well. When going all out, the light is only equal to about a $1\frac{1}{2}$ volt battery, and I have only a 2.5 bulb in it. (J.D.—Ballisodarre).

UNFORTUNATELY a transformer could not be used with advantage with the dynamo because any attempt to step up voltage would result in a loss of current which would make the final output even weaker.

The most likely causes of the trouble may be that the permanent magnet has become weak, or that the output of the dynamo has a voltage very different from that you suppose. For example, the output might be of quite high voltage, but low current, in which case it would not light a bulb taking a fairly heavy current at all well. The output should be marked somewhere on the dynamo. Also make sure the brushes touch well, if these are fitted.

Your description suggests this may be a type of motor, in which case little can be done to make it operate effectively as a dynamo. Try using a bulb of low current consumption.

A novel and easily constructed version of the 'TUMBLING TANKS' GAME

THIS 'tumbling tanks' game is a miniature version of the well-known fair-ground diversion and can be made at very little cost and played, at home, especially at parties, at no cost whatever, which is more than can be said for the professional showman's apparatus.

As can be seen from the photographic illustration, the game consists of a large board in which some rectangular holes are cut. The board is tilted, and down the slope roll 'tanks' . . . actually oval shaped mustard tins specially weighted. The idea, of course, is to direct the course of the 'tanks' so that they go into the highest-scoring holes. But 'there's many a slip . . .'

Board Sizes

Within reason, the size of the board may vary, the controlling factor being the size of the material available. Even if the plywood or other material is specially purchased, it is usually in ready-cut pieces and there is no need to cut these unnecessarily. The board illustrated measured 3ft. by 1ft., but this was chiefly because the writer had a piece of wood this size.

He would not recommend anything very much smaller, but though a larger board gives more scope (and looks more impressive if made up as a sideshow at a bazaar and amateur fun-fair for charity). There is not only the question of storage space but one must bear in mind that the holes will have to be cut with a fretsaw and must not be so far 'inland' as to be beyond the range of the saw.

In a similar way, the moulding round

the edge was of 1½ ins. by ½ in. stuff, with a half-round top, but here again this was used because such moulding was handy and seemed of a suitable size . . . enough to stop the 'tanks' rolling off but not over-heavy.

The board can be of plywood or composition board (but not plaster board, of course). A somewhat inferior piece of plywood could well be used . . . one that is a bit warped and has slight hollows in it . . . since this would make for a more sporting (?) 'course', by deflecting the true course of the 'tanks'.

Take care, however, that the plywood is not too inferior, as may happen if tea-chests that have been left out in the rain are used. One does not want the layers of ply to separate when the holes are sawn.

'Tank' Preparation

Before the holes are cut, the 'tanks' are prepared. These are ordinary small mustard tins. Those used by the writer were just under 2ins. long, with approximately 1½ ins. by 1½ ins. axles. The holes were planned accordingly and it is necessary to point out that if tins of any other size are used, the holes must be modelled proportionately.

Six tins are recommended. This means that one buys about a year's supply of mustard (or enough for several mustard



The complete novelty photographed in use

baths!). If the mustard is transferred to a screw-top jar, it will keep, and none will be wasted. It cannot be said to be unduly expensive.

Inside each of the otherwise empty tins a length of iron rod is placed, a trifle shorter than the length of the tin. Once again it is necessary to state that no definite dimensions need be given, as scrap iron rod will probably be used, about ½ in. diameter. The home handyman usually has a box full of useful scrap.

The Tumbling Effect

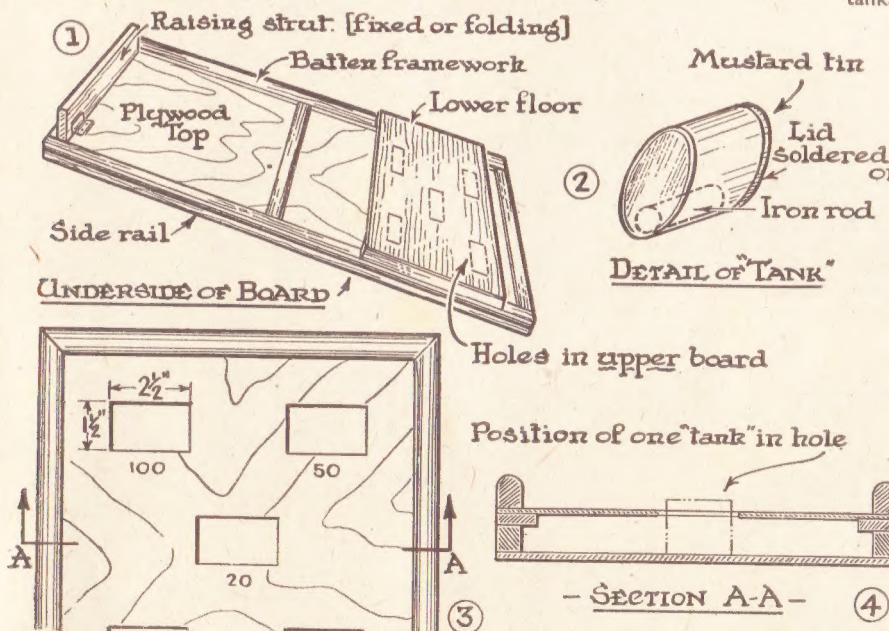
Some larger size ball bearings can also be used. The final test is that if the 'tanks' so provided with a loose weight are placed on the end of a slight incline, they tumble over and over in a curious way (see notes, later, on the slope of the board).

The lids of the tins should be soldered on, otherwise they will fall off, especially if dropped. Or children will soon 'investigate' the 'works'. Quite a light touch of solder is all that is necessary. The tins will be pretty clean, but the area in the neighbourhood of the soldering should be rubbed bright with fine emery paper and given a light smear with Fluxite or a similar flux.

The soldering iron should be properly tinned first. This is done by heating it, giving a quick rub with a file, dipping in flux and touching the end of a stick of solder. If properly done, the end of the iron will take on a layer of solder and provided the iron is not subsequently overheated, the end will remain tinned.

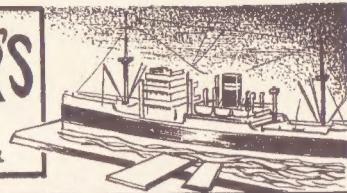
In the soldering proper, the iron is heated, dipped into flux

(Continued foot of page 141)





The SHIPMODELLER'S Corner



THE making of models of sailing ships of all types (except those of the later types, when turnbuckles came into use) requires the making of large numbers of deadeyes and blocks.

In very small models of the miniature type these can be simulated by small blobs of glue, painted black. In models a little larger, but still in the miniature class, small beads and angler's split-shot will serve.

In Hobbies kits and all models above miniature size, we face a different problem. The scale and finish will have a great deal to do with the final appearance of your model; they must, to be shipshape, be neatly finished and uniform in size, etc.; above all they must be made to correct scale size.

We will take first the deadeyes in use in Elizabethan times, when they were heart-shaped and pierced with three yard-eyes. Single hole deadeyes were known as 'bull's-eyes' (see Fig. 1).

There are three practical methods of making these. The first and an easy method is to purchase a heart-shaped punch and use this to punch out the deadeyes required from an old gramophone record that has been softened by heat. Afterwards they can be crowned on each side and a groove filed around the edge with a rat-tailed file, then drilled in a jig to ensure getting them drilled in a uniform manner.

For the second method take a piece of plywood the same thickness of the finished deadeye, and fret out twelve heart-shaped holes, exactly alike in size and shape. A piece of heavier plywood is used for the base and if two small bolts and wing nuts (or ordinary wood screws) are fitted, one in the centre at either end, you have a mould for turning out twelve deadeyes at one operation.

Before using the mould each time, give the holes a liberal dressing of three-in-one oil, to prevent your moulding material, plastic wood, from sticking to the mould.

Fill your holes with plastic wood to the level of the mould and, using a small punch made from three beheaded pins mounted in a handle of dowel, punch the three lanyard holes in each deadeye. Leave for six hours, then remove mould from base and gently push out each deadeye. Leave to harden until next day and you can then file the outside groove, finally crowning both sides (see Fig. 2).

The third, and by far the best method used by experienced modellers is as follows. Take a piece of dowel of the required size of your deadeye at its largest measurement, and with a small block plane and glasspaper, shape this

along its entire length until it is heart-shaped, as in Fig. 3.

Mark out the measurements for the individual deadeyes and file your grooves in. Cut off each one in a small jig to assure all are of the same thickness and crown both sides.

The Making of Deadeyes

by 'Whipstaff'

Any of these three methods can also be used for the circular deadeyes of the later periods. The circular deadeyes can be easily turned on a lathe if you possess one. If you do not, a later article in this series will show you how to make a small hand-operated one at little cost, which will do all the turning required in ship model making.

NOW for a simple jig for turning the circular type, take a piece of hardwood 1in. square and 1½in. long, down the centre of this piece, lengthways, drill a hole to make a smooth fit for your dowel. A second piece, circular for preference, is drilled through the centre to fit the dowel; this should be ½in. thick and about 2ins. in diameter; from one edge drill a hole through to centre hole to take a locking screw made from an ordinary wood screw with the point filed off.

The first block is held in a vice, the dowel placed in both with the end projecting sufficient to form your first deadeye. With both blocks held together, tighten the locking screw. Now with a small needle file and rat-tail file, you can now crown the face and turn your groove while rotating the circular block with one hand (see Fig. 5).

In Fig. 4 we have an easily made box jig for cutting off deadeyes of both types, made by hand from dowel rod. For drilling deadeyes the small jig in Fig. 6 can be made; this consists of two pieces of plywood, cut square and of the same thickness of the deadeyes.

One piece is drilled with a hole the size of the deadeye and then glued to the second piece; when set, the second piece is drilled with the three lanyard holes, using the deadeye hole as a guide.

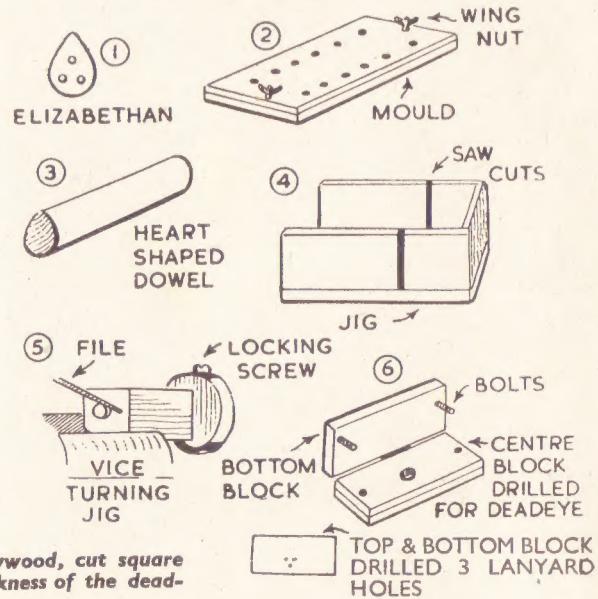
A third block is now needed of the same size for the base; the top unit is hinged to this base piece and then the three pieces are assembled for use. The base can be drilled the same as the centre piece, a hole the size of the dead-eye, to protect your drills, or three lanyard holes as in top piece.

The dead-eye is placed in the hole in the centre piece and the jig closed. It is then a simple matter to drill through the small holes in the upper section, thus ensuring every deadeye is drilled exactly the same.

FOR materials use erinoid for dead-eyes, $\frac{1}{8}$ in. and under; this is easily obtainable by purchasing erinoid knitting needles from any drapers or departmental store, of the size required for the dead-eyes. For sizes $\frac{3}{16}$ in. and upwards there is no finer material than boxwood or holly. For cutting off in jig use a Hobbies stiff-backed model saw.

If you are not certain of the size of your deadeyes for the model you are building, please send your request to this corner and if you are not building from a Hobbies kit, state if possible, the scale you are working to, and I shall be pleased to let you have the necessary scale size.

In a future article I shall deal with the various types of blocks and how to model them.



How the amateur radio enthusiast can construct a COMPACT BATTERY 3

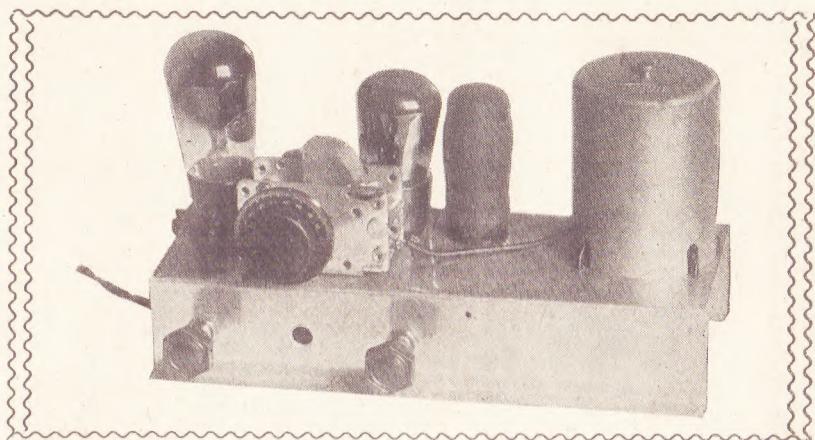
WITH modern valves, speaker and components, quite a simple three valve circuit can give excellent results. Quality of reproduction is good, and the range and volume are ample for all ordinary purposes.

The receiver described here can be built with confidence, and should give many years of useful service, either for regular use, or as a second receiver for another room. It is, perhaps, best to collect the components required first. All these are of ordinary type, and may be bought without difficulty, if not already to hand.

Components Required

The three valves are 2-volt battery types, such as manufactured by many British firms. For detector and L.F. types such as the Osram HL2 (or equivalents by other manufacturers) are employed. For output, an LP2 or similar valve is used, and the positions in which the valves are eventually inserted are shown in Fig. 2.

A coupling transformer for direct



switching, a 2-pole 3-way switch is used. This is wired to have three positions as follows: 'Off', 'Medium Waves', 'Long Waves'.

The tuning coil is a Dual Range Coil with Reaction, and may be either screened or unscreened. A home-made coil can be used, of course, but as full

different dimensions, according to what is available. Ready-drilled metal chassis may also be purchased.

Fig. 2 shows where the valveholders and other components are placed. The tuning condenser is fixed by small brackets bolted to the chassis. If a wooden chassis is used it is absolutely

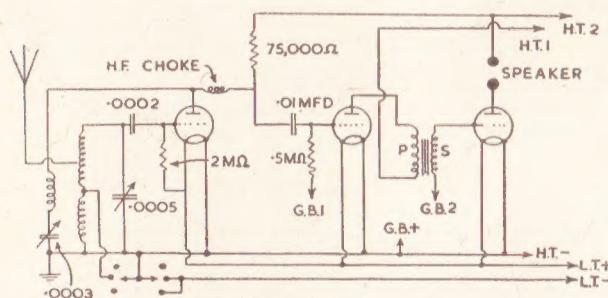


Fig. 1—The theoretical circuit

coupling, ratio about 1:3 or 1:5 is necessary. A good quality component will make itself felt here by providing extra amplification. The valveholders (4-pin English type) and other small parts can be obtained without difficulty.

A solid dielectric reaction condenser is used, its capacity being .003 mfd. If a .005 mfd. condenser is to hand, this can be used here. The tuning condenser is air-spaced, and .0005 mfd. A small reduction drive and dial are fitted. For

details for winding these have appeared in numerous back issues of *Hobbies Weekly*, these details are not repeated here. With the ready-made coil, the position of tags or terminals will vary from manufacturer to manufacturer, and the leaflet supplied with the coil purchased should be followed.

The speaker is a small permanent magnet moving coil one, with matching transformer for battery triode valve, and the speakers produced by many manufacturers will all give good results.

The set is made on a metal chassis $4\frac{1}{2}$ ins. by 7ins. However, the chassis may be made from wood, or may be of slightly

essential that a lead be taken from the condenser frame to the earth terminal. (With a metal chassis, this connection is formed by the metal itself).

Place the valveholders as shown so that Plate, Grid and Filament connections are correct when the wiring diagram is followed.

The tuning coil is bolted at the right of the chassis, and small holes are drilled so that the necessary leads may be taken up to it from below. A hole is also necessary for the lead which goes from the fixed plates tag of the tuning condenser to the .0002 mfd. fixed condenser underneath. Two further holes permit leads to go from the plate of the L.F. valveholder to the primary of the transformer, and from its secondary to the Grid of the output valveholder.

Completing the Wiring

Reference to Fig. 3 will show where other connections go, and any insulated wire of from 22 to 18 S.W.G. can be used

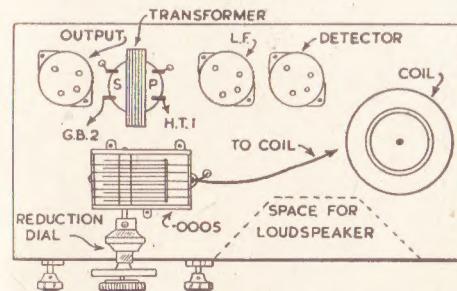


Fig. 2—Top of chassis lay-out

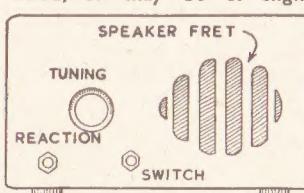


Fig. 4—Panel layout of cabinet

The difference of back and front entrance shown by this DOOR BELL INDICATOR

MOST front doors are fitted with a bell push and electric door bell, and it is quite easy to fit another bell push to the tradesman's door to work the same bell. When this is done, though, an indicator board is needed to show at which door the caller is waiting.

When the indicator described here is in use and the bell rings, the current to the bell flows through one of the coils.

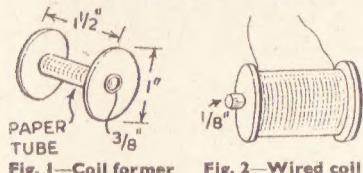


Fig. 1—Coil former Fig. 2—Wired coil

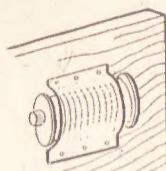


Fig. 3—Coil fixed in place

The iron core inside the coil becomes a magnet and attracts the metal pendulum hanging near it.

When the bell stops ringing, that is, the current stops flowing, the iron core can no longer attract the pendulum and this is released. The pendulum, however, swings to and fro quite a few times before coming to rest, and so indicates which bell-push has been used.

The Coils

Two coils are needed and these are best taken from an old electric bell,

Battery 3—(Continued from page 133)

for wiring up. Lengths of flex are used for battery leads. A piece of twin flex about 18ins. long is also used for the speaker connections, going from H.T. positive and output plate as shown.

The coil connections are arranged as follows: Grid terminal of coil to fixed plates of tuning condenser. Wavechange switch terminal through chassis to switch. First reaction coil terminal to H.F. choke. Second reaction coil terminal to fixed plates of reaction condenser. Earth terminal of coil to securing bolt, in contact with chassis. If a wooden chassis is employed, take a lead from this terminal to the rear earth terminal anchoring the H.T. and G.B. leads, in Fig. 3.

Take care that no bare joints can touch the chassis. The Aerial lead-in is taken directly to the aerial terminal on the coil.

Switch wiring is shown in Fig. 1. In the first position, the set is 'Off'. In the second position, the low tension supply

otherwise they can be made as follows. Use a washer cutter or a fretsaw to cut two plywood discs 1in. in diameter, with a central hole about $\frac{1}{8}$ in. in diameter (Fig. 1).

A tube is made from a strip of paper 1 1/2ins. wide and about 6ins. long. Lightly smear the paper with glue and then roll it around a pencil, but slip the pencil out as soon as the rolling is finished. When the paper tube is quite dry, glue on the

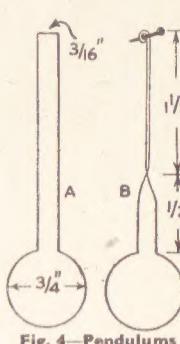


Fig. 4—Pendulums

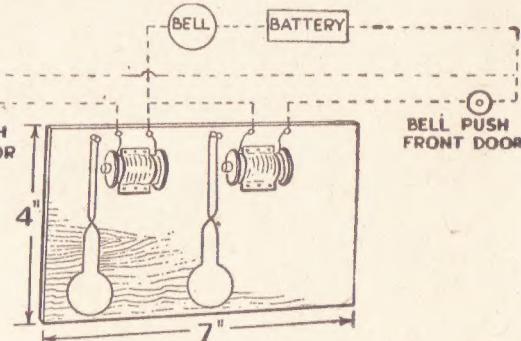


Fig. 5—Complete wiring diagram

ends as shown. Finish the coil by winding the No. 28 d.c.c. copper wire, leaving two free ends about 6ins. long (Fig. 2).

Cut two pieces of soft iron rod 1 1/2ins. long and push these into the coils so that $\frac{1}{8}$ in. is jutting out at one end. These iron cores must fit quite tightly.

The baseboard measures 7ins. by 4ins. and the coils are kept in place with a 1in. wide strip of tin. Bend the strip of tin around the coil to give it the right shape, then tap with a hammer to bend up the two flanges. Punch holes in these as shown in the diagram, and fix to the baseboard with small nails or screws.

swinging action is quite free. Differently coloured paper discs can be glued to the circular part of each pendulum.

The complete wiring is shown in Fig. 5. If desired, a mains transformer can be used instead of a battery. A suitable cover for the unit is shown in Fig. 6 and this can be made to hinge onto the base or to slip tightly over it. (285)

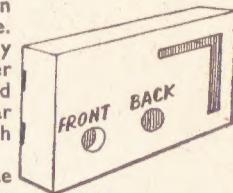


Fig. 6—A cover

is switched on, and the coil switched to 'Medium Waves'. In the last position, the L.T. supply is still on, but the coil allowed to operate on 'Long Waves'.

Operating Notes

Insert the valves in the manner already mentioned and connect speaker, aerial, earth and batteries. After switching on, medium wave stations should be found without difficulty. If the reaction condenser does not build up volume properly, the two leads going to the reaction terminals of the coil will have to be reversed. For long waves, turn the switch to the next position.

A 120 volt H.T. battery will give most volume, though a 90 volt battery is satisfactory. H.T.2 may be taken to 72 to 108 volts, and the best grid bias voltages will be about 1.5 and 6.0 for G.B.1 and G.B.2 respectively.

For proper reproduction, it is necessary that the speaker be enclosed in a cabinet.

The front of the cabinet is shown in Fig. 4. A neat cabinet can be made by using $\frac{1}{2}$ in. wood for top, bottom and sides, and cutting the front from 3-ply. All corners and edges should be rounded with a rasp, and the whole finished off with fine glasspaper. A quick-drying medium coloured varnish is then applied.

A square of silk is stretched across the speaker fret, inside, and the speaker screwed in position. Do not use screws which will penetrate completely through the panel. Also assure that there is room for the receiver to slip in from the back, with the control spindles projecting through clearance holes in the cabinet front.

The dimensions of the cabinet will depend upon the size of the speaker and chassis, and whether the batteries are to be accommodated or kept separate. The constructor should be able to settle this point with ease.

You can improve your output and ability with these HINTS FOR HANDCRAFT

READERS are finding the usefulness of the fretsaw on more and more occasions, and although originally intended for fretwork designs, it is proving its worth in model making, for toy making, and a hundred and one occasions in the home, for general woodwork. We are always stressing its general usefulness for all sorts of jobs. It is also worth remembering that not only is there a fretsaw for wood, but another type for cutting sheet metal.

Very often, for instance, in radio repairs and simple metalwork, pieces of brass, copper, zinc, etc., are needed to a certain shape. We have known readers who endeavoured to use the ordinary fretsaw for this purpose, and strangely enough, they have frequently been successful for a short time.

At the same time, it is obviously much better to use the specially made blade for such work. This metal-cutting fretsaw is of the same size as the ordinary wood-

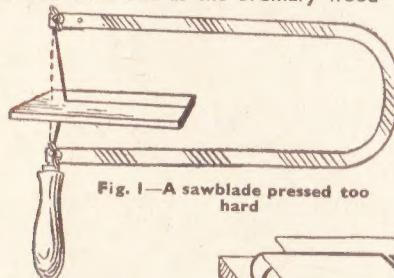


Fig. 1—A sawblade pressed too hard

cutting blade, but is fitted with a much larger number of teeth, and is manufactured of a special metal to stand up to the work. A wood saw certainly does get hot if used long andarduously, but it is not really material.

A metal-cutting saw, however, should be lubricated in use to overcome the likelihood of intense heat, and consequently increased likelihood of breakage. The metal-cutting saw can be used in machine or handframe in the usual way, and the suitable lubrication can be obtained by an occasional rub of the blade through wax or grease, such as a candle or even with a spot of light oil dropped near the cutting line at infrequent periods.

A Common Failing

In both these types of saw there is one common failing, even with the more experienced worker, and particularly to be found with the beginner. It is that of endeavouring to force the saw too hard through the work. There is, obviously, a natural tendency to speed, and an anxiety to get on with such pleasant work and see the results as quickly as possible. This is largely one of the causes of many breakages.

The cause can be overcome, not necessarily by a slower process of work, but by more careful control on the saw itself. The blade is fitted in the frame or the machine as tightly as possible, and with the special grips provided at the ends of all Hobbies tools, there is little likelihood of the blade pulling out.

Fitting a Blade

If it does, that is because the wingnut or the screw and shackle at the top, have not been tightened up sufficiently. About half the blade is sufficient to insert between the holders, and if firmly fixed by the turned wingnut, there should be no likelihood of the blade bursting out.

At the same time, if you force it through on to the work, the blade must, naturally, bend somewhere, and in this connection, the illustration at Fig. 1 shows exactly what happens. You are putting an undue strain on the blade itself, and forcing the centre of it back as it passes through the wood or, of course, the metal. This would not be so bad if it happened only at the centre of the blade, as shown in the illustration, but you will realise that when you are bringing the frame down, the blade is also bent back as it gets towards the top, and in the

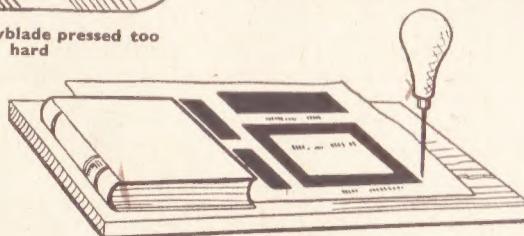


Fig. 2—Pricking off a pattern

reverse process when it gets towards the bottom.

In consequence a constant change of tension and pressure is present, and a breakage of some sort is sure to result. It may be the blade snaps in the middle, or just where it passes into the screw and shackle at the top. But the cause is the same. It can be prevented by maintaining an even up and down motion in cutting, and gradually going forward into the work on hand. There is no need to press on hard, because the saw will cut quite capably with the steady even pressure and without the undue push behind it.

Paste or Trace?

Another point frequently raised by users of our design sheets is the question of whether to paste the patterns down or not. This is a matter of individual taste, but most expert model makers and toy makers do not do so. Indeed, except in the case of intricate fretted patterns,

there is no need, because it is a simple matter to transfer them direct to the wood.

If you place the pattern sheet over a piece of carbon, then pin the whole thing down to the board, you can trace the outline quite easily. Be sure to use a ruler for straight lines, and get the corners and any joints accurately marked out. Indeed, you do not need to go over the whole pattern outline, but merely to mark the corners off, or the angles, and then link them up on the actual wood with a pencil line after the carbon and pattern parts have been taken away.

Marking out a Pattern

A step further than this is that you can merely prick through the position of the corners and then connect these holes with a pencil. You can see the method at Fig. 2. The pattern is just laid to the wood and held there temporarily by a book or some drawing pins.

A sharp pointed awl is pricking the position of the corner of the pattern, and it is the same with the other three corners of the rectangle required. When the design is taken away, you have the four holes, and these are joined by the pencil line along a ruler edge.

Apart from the carbon paper process, you can duplicate the pattern by means of tracing paper or any similar transparent substance. In this case, you go over the outline on the top of the design sheet and then turn it over to transfer it to the wood by going over the

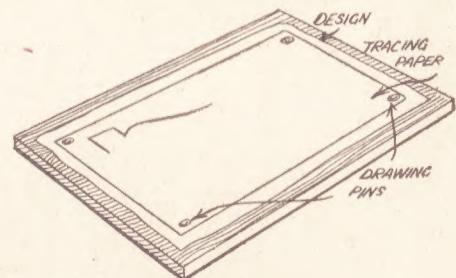


Fig. 3—Duplicating a design

lines again. The tracing paper can be turned over, providing the design outline is symmetrical. If it is not, then you will have to black in the outline on the reverse of the tracing paper, and put it down again right side up on to the wood before marking the outline required.

In using this method, as in the other, it is essential to hold the paper down securely. We have seen workers hold the whole lot down with one hand, and attempt to draw the design with the other. In the process, the paper has become moved and in consequence, when they cut out the part concerned, they are dismayed to find that it will not fit, and at a loss to know why. It is essential, therefore, to fit the parts

firmly and for this, drawing pins should be used. You can see the various layers in the details at Fig. 3.

Another point worth noting in this connection, is that the drawing pins

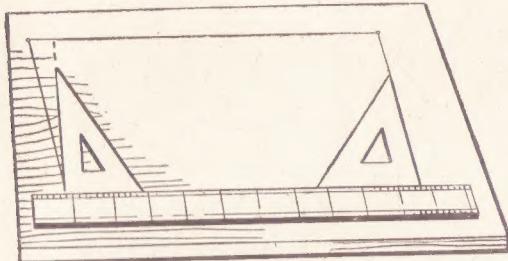


Fig. 4—A rule and squares ensure accurate angles

must be put in direct, and not pressed at all sideways. If this is done, the tracing paper may have moved or become loose at one corner, instead of being perfectly flat on to the work.

Rule and Square

Whenever these drawings are duplicated direct on to the wood, be sure they are accurate so far as their angles are concerned. After all, you can have a rectangle of the given size, but which may at the same time be sloping and not accurate at its corners.

All right angle corners must have an angle of 90 degrees, or if you have half this angle, then, obviously, it will be 45 degrees. Both these are usually provided on a setsquare, and this is an essential instrument to ensure accuracy of your drawings. When you have pencilled the outline on to the wood, test it out to show accuracy of angles. You can do this in the usual manner, an illustration of which is shown at Fig. 4.

Here you see the ruler along the

bottom edge, and the setsquare raised to ensure that the line of the design is true. You will notice how at one end in this detail, the line is at the wrong angle, although possibly the point at the

corner measures the same distance from the other when marked out with the compasses. You can realise, too, how if cut like this, the whole thing would be inaccurate, and would probably result in a second piece having to be cut.

These little points of testing and accuracy in preparation, do make a big difference in time and labour involved. If you are continually having to cut two pieces because one is done wrong and wasted, obviously you are much more likely to tire of the work and lose half the enjoyment.

How to File

Another point sometimes raised by readers is the use of a file to get a chamfer on the edge of wood. Indeed, some of our beginners do not realise that the actual shape of any chamfer required, is shown by a sectional drawing on the pattern concerned. This section is the shaded piece put near the edge of the part and, of course, always on the actual line to be dealt with.

The chamfer will reduce the thickness of the wood, and also make a more attractive appearance on certain occasions. For instance, if you have a fairly thick piece of wood serving as an overlay for a photograph. By chamfering the edge around the picture, the apparent thickness of the wood is reduced and does not appear

so unsightly. It also helps to lead the eye to the picture, apart from the surround material.

Stop Chamfering

Then, of course, in models and ordinary work, the shaping and chamfering is necessary, and the use of a flat file is imperative. The way to hold this is shown at Fig. 5, and here you see how it is held in both hands at both ends, and drawn across the edge of the wood at right angles. You will find if you run the file lengthways you will mark the actual wood and not cut it away as is required.

The detail at Fig. 5 also shows you the type of chamfer sometimes referred to as a 'stop chamfer'. The edge of the wood is filed to an angle such as we mentioned in connection with the photograph frame just now, but is not carried the full length. It is stopped off a short distance

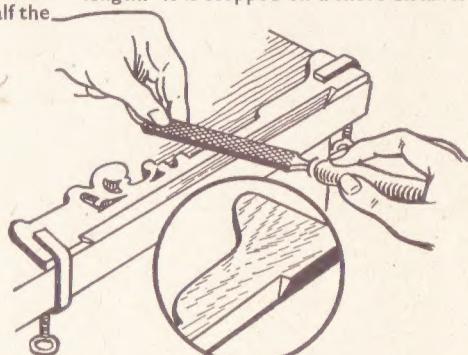


Fig. 5—The right way to hold and use a file

before getting to the end of the work. This again, in the case of the photograph frame referred to, is often an attractive means of adding to the appearance of the work in hand.

SOME ELECTRICAL QUERIES

Battery Leakage

WHAT is the cause of a grid bias battery running down within two weeks? (A.J.S.—Thaxted).

IF a new grid bias battery has run down in a few weeks, there must be leakage or partial short-circuit in the receiver, and the insulation and wiring should be examined to discover this. If the receiver is built on a metal chassis, insulation may have perished where a lead passes through, thus causing a short to the metal.

Damaged Cone Speaker

I HAVE a loudspeaker which has a number of cracks in the cone. Is there a simple but efficient way of making good the damage? (A.C.—Tonbridge).

IT will usually be found quite satisfactory to repair cracks or breaks in a cone with strips of paper, secured with glue. The pieces of paper glued on should not be too large, an overlap of

about $\frac{1}{8}$ in. each side the breaks being sufficient.

Record Player

I HAVE an electric record player with the I.P.U. in the wireless. Please tell me if I can make a radiogram of it without using the wireless. (J.M.—Ranelagh).

WHERE records are played with a pick-up, some amplification is necessary, and apparently this is now being provided by a wireless receiver. If this receiver is not to be used, it will be necessary to construct an amplifier to replace it, so that the loudspeaker may be operated. This amplifier would be less complicated than the receiver, as no coils and other tuning arrangements would be necessary, and two or three valves should give all the volume required. Back issues of *Hobbies Weekly* contain constructional details of various amplifiers, battery and mains operated with details of pick-up and

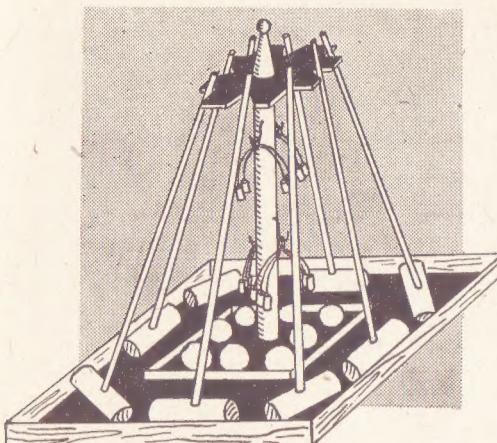
other connections, and it is suggested that reference to these would enable a suitable type to be selected.

Boat Motor

I AM building a 28in. model launch, and I would like to fit an electric motor in place of a 1.3 C.C. diesel. Could you tell me of any particular motor or special voltage electric motor to get? (R.D.—St. Albans).

WE suggest you use any well-made permanent magnet field electric motor, suitable for working on a voltage of about 6 volts. This could be energised by three dry batteries (torch batteries), in series, and this combination should run your boat for half an hour or so at a good speed, if you eliminate all possible friction and choose a suitable propeller small enough to allow the motor to run at high speed when the propeller is submerged.

A fascinating game to play and make is this TABLE CROQUET SET



THIS fascinating indoor game will enable you to spend many happy evenings in your home. Make it in a few hours, and then invite some of your friends to have a game with you. Two may play, or any number desired up to eight. Your friends will not be satisfied with one game, for they will want to play many more, in order to become proficient in this game of skill.

The Stand

The Stand should be made first. The wooden base, $\frac{1}{2}$ in. thick, measures 10ins. by 10ins. Nail to this four $\frac{1}{2}$ in. square strips, to form a square near the centre. Two lengths measure 6ins. each, and two 5ins. each (Fig. 1).

Then, using $\frac{1}{2}$ in. wood, cut two lengths 10ins. by 1in., and two more 10 $\frac{1}{2}$ ins. by 1in. These are placed around the edges, the longer ones overlapping the smaller (Fig. 1). The centre rod is cut from a broom-stick, and is 9ins. high. Screw it firmly to the base.

Next drill a small hole right through the piece of broom-stick, 1in. from the top, and another hole 4ins. from the top, taking care to make this second one cross the first boring. Insert through each

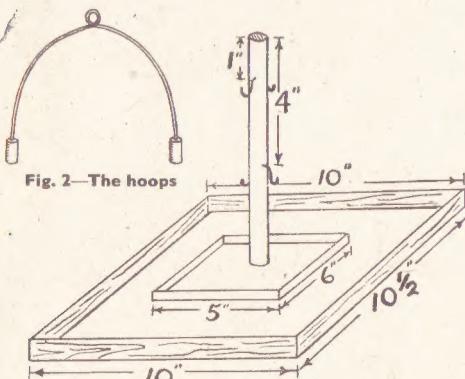


Fig. 2—The hoops

Fig. 1—Base parts and centre stand

hole a piece of thick wire, length 4ins. Allow equal portions to protrude at each side, then bend the ends downwards. Turn up the ends to form loops capable of holding three loops of wire.

The Hoops

You will need ten hoops to hang on these hooks. For each hoop take an 8in. length of the thick wire, and bend the wire in the middle around a stout nail, to form a loop for hanging. Next curve the wire to form a hoop; this can easily be done if bent around a cocoa tin.

The feet for the hoop are formed of two pieces of $\frac{1}{2}$ in. brass tubing, each 1in. long. (Aluminium or iron tubing can also be used, and are cheaper and easier to obtain from an ironmonger). The tubing is not difficult to cut, if the 20in. length of tubing required is placed in a mitre-box, and the 1in. portions removed with a fine hacksaw or a metal cutting fretsaw.

Knock a piece of $\frac{1}{2}$ in. dowel rod into each 1in. tube. Let it penetrate about $\frac{1}{2}$ in., and then neatly cut it off. Make a small hole in the centre of the wood, and insert the end of the wire, bending it underneath to prevent the wire being pulled out from the tube. The under portion of the tube will be open, and this should be filled with lead, to ensure that the hoops will not fall over when hit by the balls (Fig. 2).

The Top

Now make the top of the stand with $\frac{1}{2}$ in. wood; the required piece measures 4ins. by 4ins. When cut out, take a pencil and draw four lines $\frac{3}{4}$ in. from the edges, neatly saw away the four corners, and cut out four V-shaped pieces from each side (Fig. 3).

Then screw it to the central rod, with two long thin screws, taking care to

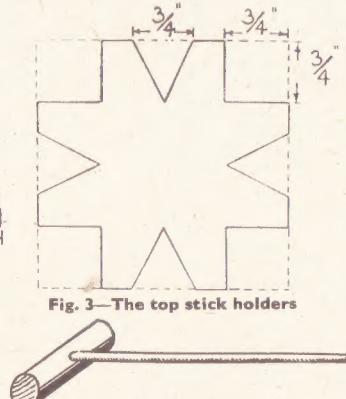


Fig. 4—The mallet stick

leave the centre of the rod free for the handle to be screwed on. The handle is the screw-in type, obtainable at most ironmongers. Place the hoops on the hooks—three on each bottom hook, and two on each top hook.

Balls

Table-tennis balls can be used, although heavier wooden ones are much better. The writer cut a small hole in his table-tennis balls, and filled them with sand. The hole was carefully sealed with glue, and glasspapered.

Mallets

The mallets, eight in all, are easily made. For each obtain one 9 $\frac{1}{2}$ in. length of dowel rod, and 2ins. of the broom-stick. With brace and bit make a $\frac{1}{2}$ in. hole in the centre of the portion of broom-stick, and insert the rod. Secure it firmly by driving in a nail (Fig. 4).

Painting

Carefully glasspaper all the woodwork, then stain and varnish—walnut or mahogany will give a pleasing appearance. To identify the balls easily when playing, a line $\frac{1}{2}$ in. thick should be painted around the middle of each ball, a different colour being used for each.

The mallet used with the ball should also have the same colour painted on its two hitting ends. (If several kinds of paint are not available, other means of identification can be used, such as dots and dashes).

The Croquet set is now complete, and you will need a suitable table on which to place the hoops. To prevent the balls

(Continued foot of page 138)

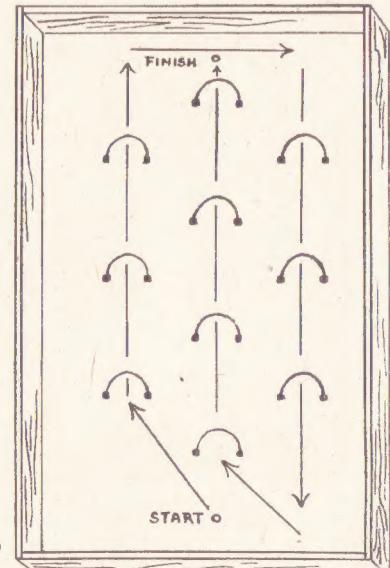


Fig. 5—The games board, with direction of play

The last details for the amateur undertaking SILK SCREEN PRINTING

HERE is the final article of our short series by which the craftsman can do printing by the latest and most popular method, for small posters, cards, pictures, etc.

A far more satisfactory way of producing hand-cut stencils is by using profilm. Profilm is a semi-transparent sheet which can be obtained from silk screen printers' suppliers and it is placed over the finished design (which is on the baseboard, in register) and being nearly transparent, this design can be seen under it.

Profilm is a duplex which consists of a paper backing and a tissue which supports a thin 'skin' of shellac. Between the paper backing and the tissue there is usually a coating of wax. When cutting a profilm stencil, no pressure should be used, for the object is to cut through only the shellac and the supporting tissue, thus leaving the paper backing quite uncut. The weight of the stencil knife is sufficient to do this if it is really sharp and so no pressure should be applied.

Cutting the Stencil

Therefore, cut your stencil for the colour which is your immediate concern in profilm, working very lightly. You may not be successful at first, but the knack will come with practice. As you cut, remove the unwanted pieces of the shellac and tissue—which will come away quite easily if you lift them by one corner with the stencil knife—leaving the actual stencil attached to the paper backing. This method prevents the portions of the stencil such as the centres of the letter 'O' from becoming loose—for all are attached to the paper backing.

When the cutting of the profilm stencil is completed, lower the screen (which is hinged to the baseboard) on to it and apply a warm (not too hot) iron to the upper side of the silk or organdie. This will cause the shellac and the tissue to adhere to the mesh of the screen and will also soften the wax between the tissue and the paper backing.

Backing Paper

After the ironing, the screen should be raised, and it will be found that the paper backing can be peeled off, leaving the shellac and tissue on the screen.

Table Croquet—(Continued from page 137)

rolling off the table, knock together four lengths of 1in. square wood in the form of a frame, to fit the outer edges of the table. A table cover—green baize is admirable—helps to keep the balls on the table.

Rules

All you need to remember will be—

Thus the stencil will be transferred to the screen, accurately in register, with all the 'unattached' stencil portions safely in place. This saves a lot of work sticking the various centres into position—a job which has to be done if paper stencils are used.

So much for the stencils—which are the most complicated part of silk screen printing. Now for the materials to use.

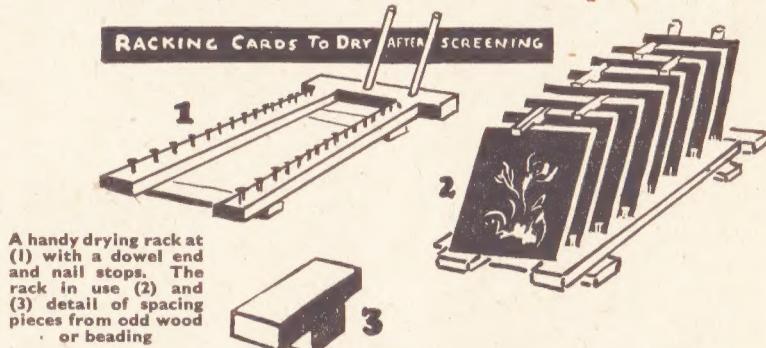
There are many excellent colours available for silk screen printing and the beginner is advised to buy them from a recognised house selling screen inks. Such houses also supply thinners and solvents suitable for each kind. But if the home screen printer confines himself at first to the group of colours known as screening posters he will be able to use turpentine to thin his inks if necessary and turps substitute or paraffin for

about as thick as cream) is poured onto the end of the screen and this is passed over the area to be printed by the squeegee which forces it through the mesh of the screen where it is unprotected by the stencil on to the job beneath.

Cycle of Operations

The screen is raised, the printed job removed and placed in a rack (described in the first article) to dry, and another job inserted. This cycle of operations is repeated until all the jobs are printed. Then the screen is cleaned with rags soaked in the solvents of the inks used, the stencil is removed, and, in the case of a job having more than one colour, a new stencil is prepared.

When the first colour is dry, the next can be printed. Cellulose colours may



cleaning his screens after the job is completed. Such colours will give him a wide range and they print well and dry with a pleasing matt surface.

If colours that dry very quickly are required, then a screening cellulose may be used and the necessary thinners obtained from the firm supplying the inks.

Method of Printing

The actual method of printing is simple. Having prepared the necessary stencil for the first colour and fixed it to the screen, the original sketch is removed from the baseboard, leaving the register guides undisturbed. A sheet of the material to be printed is then placed on the baseboard in the register guides and the screen lowered.

Next the colour (which should be

dry within an hour, screening posters within five or six hours, and oil colours the following day.

Material to Print On

Silk screen printing is suitable for a wide range of materials; paper, board, plywood (after the grain is filled), metal, wall board and glass being a few. There are, by the way, special colours for use on glass and these should be ordered from a supply house which specializes in these.

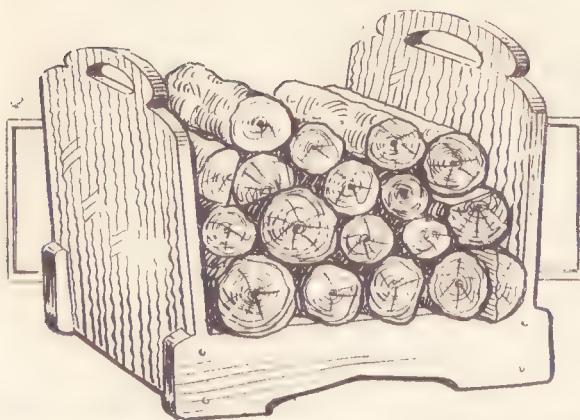
As the amateur gains experience in silk screen printing he will be able to find out new techniques for himself, for the greatest fascination about this means of reproduction is that it gives so much scope to the operator to work out his own ideas. In a world of ever increasing mechanical production, silk screen printing can remain a craft.

1. The ball must go through each hoop.
2. When a ball goes through a hoop, another shot is allowed.
3. The first player home is, of course, the winner.

The direction in which the balls should travel is given in Fig. 5. If a longer game is desired, continue to play

when reaching the 'Home' position by hitting the ball to the left. Continue down the three hoops on your left, and, coming round to the starting point, hit the ball under the three right-hand hoops. Then come down the four centre hoops, to the starting point again, and the one to get through the fourth hoop first is, of course, the winner. (288)

An attractive addition to the fireside is this OPEN LOG BASKET



FOR sheer comfort and homeliness a good log fire cannot be beaten.

Much wood will again be burnt this winter as a saving against coal. It is the usual custom to stack the supply of logs either on the stove itself or in the chimney corner. This creates an untidy appearance, especially objectionable to those more accustomed to the neat coal scuttle.

The log rack, therefore, shown here in our illustrations should be particularly welcome. In this rack the logs rest until wanted to replenish the fire. The rack is useful, too, for fetching in a further supply of logs from the wood shed. The rack is easy and cheap to make.

Wood $\frac{1}{2}$ in. thick is suggested for its construction. Oak would be a good choice, but if too dear or unobtainable, a cheaper wood may be used. Even deal would do, for it could be stained and varnished and made to look quite nice enough for its purpose.

The Side Rails

Fig. 1 shows the side pieces. Cut two to length and from a distance from each corner of 1 in. at top, and $1\frac{1}{2}$ in. from the bottom, mark off the parallel lines $\frac{1}{2}$ in. apart for the grooves into which the ends fit. Cut the grooves $\frac{1}{2}$ in. deep, using first a fine-tooth tenon saw with, say, a $\frac{1}{2}$ in. chisel for clearing away the unwanted wood between the cuts. See enlarged detail Fig. 4.

The ends of the sides should be sawn off carefully and the corners rounded, as shown. The bottom edges of the ends may be simply shaped to the shape and dimension shown in Fig. 1. This lightens the appearance somewhat but is, of course, optional.

be cut with the fretsaw and made smooth with coarse and fine glasspaper. File off the sharp angles and edges, especially round the slots and tops, just where the hands will grip the rack for lifting. For a distance of 4 in. from the bottom, cut off a strip $\frac{1}{2}$ in. wide from each side edge.

Sloping Ends

When cutting across the piece to meet the upward cuts, note the angle at which the sides make with the base pieces and cut to this angle. The cut will be at a very slight angle and is easily shown if the ends are fitted temporarily together with the base pieces and a pencil line drawn across the



Fig. 1—How to mark out the sides

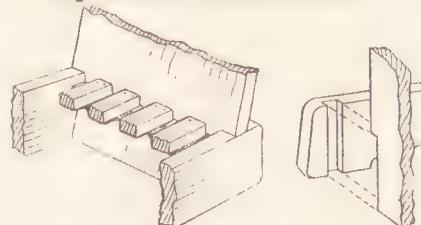


Fig. 3—The floor slats

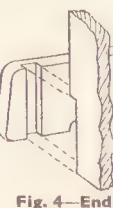


Fig. 4—End rail grooves

ends level with the sides. After cutting away the strips, the ends and sides can be fitted together permanently with glue and screws.

A slatted floor to the rack is provided to hold the logs. This is explained in

Fig. 3. It consists of 1 in. wide strips of wood, the $\frac{1}{2}$ in. stuff will answer again for this, nailed or, preferably, screwed to a batten fixed along the ends.

These fixing battens must be $\frac{1}{2}$ in. below the level of the base sides, as seen in the sectional detail Fig. 3. This then brings the floor level with the base sides when screwed on.

Cleaning and Finishing

The whole of the woodwork must now be cleaned up with fine glasspaper and stained with oak stain. If deal has been used, then a dark mahogany stain would be appropriate, finished off with a coating of copal varnish. The varnishing should be carried out in a heated room, so that it flows evenly, and a flat brush should be used.

Another way of finishing the article if it is made of oak, would be to wax polish it over the stain, and a rubbing with a duster or soft rag being given periodically.

Some workers, when making up this log holder, would like to add the little decorative panel shown in Fig. 2. It can be cut with the fretsaw in the ordinary way after the pattern has been drawn on the wood. Make an outline on paper by using the 1 in. squares shown.

Draw the squares full-size over half the

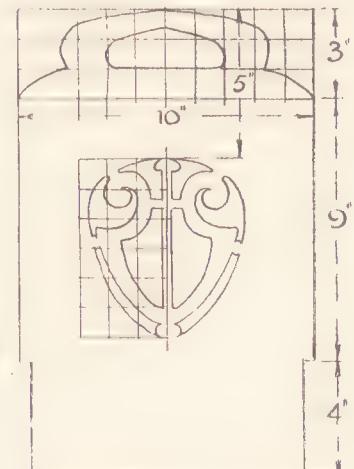


Fig. 2—Outline of sides with alternative fretted design

pattern, as shown, then follow the curves through each square. Transfer both halves, using the centre line and finally, using carbon paper, transfer the design to the wood.

Tell your friends they can get a copy of Hobbies Weekly for themselves from any newsagent now, to order

A Craftsman's Notebook

Hints and Tips

NEW whitewash brushes, and others intended for use in liquids, will wear better if put to soak in water for about twenty-four hours to swell the roots of the bristles into their sockets.

When fixing wire to a terminal, wrap it around in a clockwise direction so the nut tends to tighten it up as it is screwed in position.

Putty which is not required for use at once ought to be wrapped in grease-proof paper or left to stand on glass which will not absorb the oil.

If the divisions on your steel rule are not too easy to see, give it a rub with chalk to fill up the nicks and make them show up more clearly.

* * *

A Railway Museum

TO see a train dashing along at a hundred miles an hour would make us pause in wonder even in these modern times. Yet an even greater speed than this was achieved nearly fifty years ago. On May 9th, 1904, a Great Western engine named 'City of Truro' made a British and World speed record of 102.3 m.p.h. on a mail boat run from Plymouth to Bristol.

This veteran is no longer actively engaged but it is still carefully preserved and open to inspection, with other historic locomotives, in the Railway Museum at York. Anyone interested in railways, whether real or model, must find real pleasure in looking round this out-of-the-ordinary museum, and so I imagine do the many other visitors.

Exhibits date right back to the beginning of last century, when the piston moved vertically instead of horizontally as at present, and when the funnel was several feet high. Here, too, we can see what carriages used to be like—the open Third Class, the covered-in Second Class with plain wooden seats, and the more comfortable First. Numerous other exhibits, besides engines, give us an insight into the history of railways.

Something I had not previously heard of was the Dandy Cart, a small open truck used in the days when horses hauled trucks from the collieries. When a downhill stretch of track was reached, the horse was detached from the front, waited till the train had passed, then jumped into the Dandy Cart at the back to ride down the hill.

* * *

Marbles were Favourites

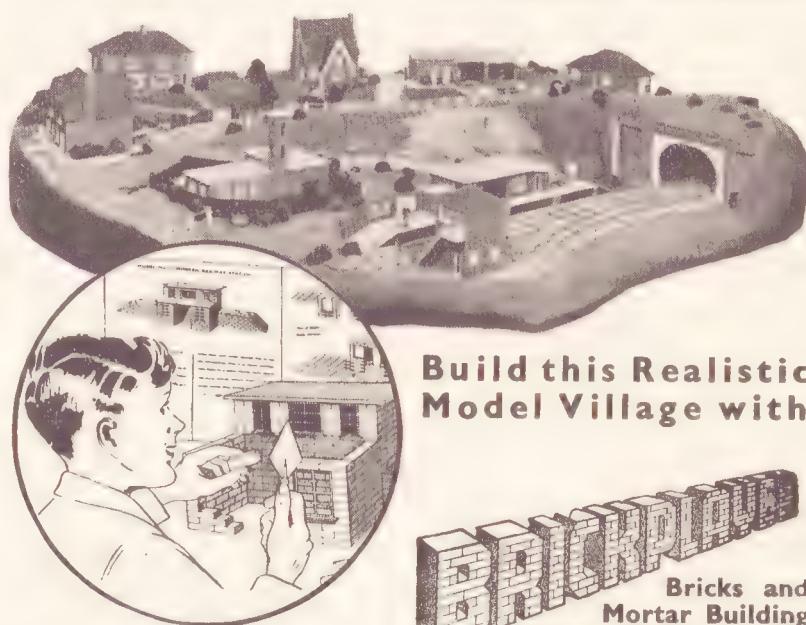
TIME was when every youngster boasted a bag or pocket full of marbles or 'taws' as they were called. And what a grand feeling it was to have more than other fellows, especially if

there were a few coloured or even plain 'gladalleys'—these being the glass sort, if the term happens to be new to you.

Nowadays marbles do not seem nearly so much in evidence, but they have always been good fun. In fact, although favoured mainly by boys, one could occasionally see men also playing marbles, or 'laking taws' if you like a variation of words. Local teams would sometimes match their skill with others from neighbouring districts.

Like many another game, marbles has its own words and phrases peculiar to the sport. Two such are mentioned above, then there is 'ferry' for the first player, 'seggy' for the second, and so forth; and I believe there are dozens of others which I do not just recall.

What different games can one play with marbles? Well, an exciting favourite is—or was—for players to roll a marble by the wall or along a curb in the playground, trying to hit that of their opponent, which marble belonged to who being distinguished by different colours. Then there is the one where players throw a handful in an effort to get as many as possible into a hole scooped out of the ground. Another is the cardboard boot box pierced with holes through which the marbles are rolled.



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A novel, lovable 'Teddy Bear' pet to keep is THE GOLDEN HAMSTER

THE Golden Hamster is a small rodent originating from Syria. It has been likened to a 'toy bear' and makes a delightful pet, docile, cleanly in habits, odourless. It is hardy, too, and with proper care and attention, suffers little from diseases.

The Golden Hamster is now stocked by many pet shops and is reasonable in price. It is a prolific creature and if the owner of a pair desires to turn his hobby into a profitable one, he can soon have a stock on hand for sale.

These few hints, however, are merely for the hobbyist who finds delight in keeping live pets. He will find the Hamster a charming animal, and also very amusing by its little antics. Some liken it to a small monkey, others to a squirrel minus tail, and so on. Actually it is different to any other and it affords much pleasure as a pet for adults or the younger folk. The Hamster is pretty in appearance, and of a golden colour on body, with white underparts, and bright eyes like tiny black beads. When buying, see your Hamster appears in good condition. Avoid any having a 'moth-eaten' look.

Easily Housed

In the U.S.A. Hamsters are now being bred and sold extensively, for as novel pets they have caught the interest of the public. There, the Golden Hamster is often advertised as a 'tiny red bear' and this description of it seems as good as any we can imagine. It becomes quite tame and will readily come to one, and permits of fondling.

One recommendation about this pet is that it can be easily housed. Any person handy with simple carpentry tools can construct a suitable hutch out of a box or packing case. One point to note, when making the hutch. Be sure to see all the interior corners are close fitting, so nothing projects for the animal to gnaw. The Hamster has a propensity for

gnawing, therefore leave nothing in a rough state inside the box, or it will quickly get its sharp teeth to work.

Some pet-keepers finish off the interior joins with strips of tin. Ensure that there is ample ventilation at both top and bottom and sides of the hutch.

The size of hutch should not be less than 18ins. by 10ins. wide and 8ins. high. You can if you like make a run for your pets. You can even have wired runs containing a 'squirrel wheel' on which the little 'bears' amuse themselves.

The bottom of the hutch—and run—may be covered with a layer of sawdust or peat, or a mixture of both. If you put a nesting box in a corner of the box—presuming you set up with a pair of Hamsters—place some of the above

SERVETTE RINGS AND BOX

OUR gift design this week is for making four serviette rings in wood, and a decorative box to hold them. The necessary wood, including special grooved corner moulding is obtainable from any Hobbies Branch for 6/4 or sent post free from Hobbies Ltd., Dereham, Norfolk, for 7/2.

material on bottom and a handful of clean hay on top.

Your pets will, of course, need water and food, but here, again, Hamsters are easily catered for. They will eat all kinds of table scraps, and green stuff. Such scraps can be put in a small dish inside the hutch.

Feeding is simple and this fact simplifies keeping Hamsters. Lots of 'left-overs' from the kitchen can be supplied, together with apple peelings and such like. Many kinds of vegetables—and carrots, turnips, wheat, oats, and cereals generally. Greenstuff from garden or field, as dandelion leaves, which contain

medicinal properties, chickweed, and other green stuffs such as are fed to rabbits, are good for the health, and Hamsters are fond of such food.

Peanuts, too, may be given. Your pet will sit up like a tiny squirrel and 'shell' them neatly. Small dog biscuits are also useful, and the gnawing of these helps to keep the creature's teeth in good order.

As you will see from the above, the question of specially selected food does not arise where Hamsters are concerned. Indeed, their wants are easily supplied. Feed once a day.

Ailments

Happily Hamsters are not prone to any specified disease and cause little anxiety in this respect. Common ailments include colds, mange, and skin diseases, especially in the case of older pets. In young ones any flesh spots can be treated with flowers of sulphur, if such spots are in a moist condition, and with sulphur ointment, if dry.

However, you will have little trouble with your Hamster pets if you follow these simple rules. Feed your pets regularly and provide wholesome food. Cleanliness is essential, so clean out thoroughly your hutch or hutches at least once a week, and disinfect. Keep your hutches in a dry, airy spot. Always avoiding placing them in draughts or in damp spots.

It is in the care and attention of Hamsters that success with your pets will lie chiefly. As regards breeding, there is little difficulty with Hamsters. They are prolific and you will require nesting boxes or breeding cages. Hamsters breed at eight weeks old, but the person who desires to add to his stock and to breed them to sell is advised to obtain a suitable book on the subject, or seek information from some breeder with experience. This short article is only intended for the pet-lover who keeps one or two Golden Hamsters for his or her own personal pleasure. (304)

Tumbling Tanks—(Continued from page 131)

and some solder taken up from the stick and then run on to the mustard tin and lid.

The cutting of the holes in the top board will present no difficulty to those who are used to cutting with a fretsaw, though owing to the size of the board, the usual cutting table will probably be dispensed with. Take care to hold the wood steady so that the saw blade is not strained and broken by the vibrating wood. The angles of the holes should be neaten by glasspapering with the paper wrapped round a rectangular-sectioned piece of wood.

The number and disposition of the holes depends on the size of the board.

The board itself, after cutting the holes, is provided underneath with a

simple framework of battens, approximately 1½ins. by ½in. section. Under the holed part, a 'lower floor' so to speak, is provided. The depth (from the upper surface to the lower) should be about 1½ins., i.e., enough for the 'tank' to drop in but leave just a fraction sticking up. This projecting part will probably bar the way of other tanks and is a legitimate hazard of the game.

The side rails are now fitted on (mitred corners make the best-looking job) and some kind of prop is fitted to the under front of the board so as to tilt it downwards. The height of this is best found by experiment (put books, etc., under until a slope is found which is neither too steep which makes the tanks hurtle down pell-mell, nor so little

sloped that action is sluggish). When this height is found, take note and prepare either a simple folding strut or, more simply, nail on a permanent block.

Glasspaper the job well. Give a priming of aluminium paint and then one or two coats of green. The score numbers are painted or stencilled in the front of the holes. In the model illustrated, the front two are numbered 2 and 10, the rear two, 50 and 100 and the middle one, 20.

A white line is painted across the board about a third of the way down. The tanks must not be handled below this line. The tanks themselves are either left plain or gaily painted with different enamels. Such a game is easily and quickly made. (307)

A sturdy, light and easy-to-make ANGLER'S FOLDING SEAT

THIS seat is light to carry, folds up flat, and when opened out is quite firm to sit upon, in no way wobbly. It is a standard pattern and worthily popular, quite easily made by the amateur woodworker if the instructions are carefully followed. As for the necessary wood, a hardwood such as beech, or birch is suggested as being hardware, but a good article can be made from common deal.

The seat bars and legs are detailed in Fig. 1. To save repetition, all parts are of $\frac{1}{2}$ in. thick wood, except the cross rails on the legs and the seat slats, these are of $\frac{1}{4}$ in. thickness. Cut two of the seat bars (A), trim one end to a semicircle and in the centre of the half circle bore a hole for a $1\frac{1}{2}$ in. round-headed screw to slip through.

At the opposite end saw out the notch shown, $\frac{1}{2}$ in. deep. This drops over the cross rail on the outer legs and fixes the seat when opened.

Legs and Slats

The inner legs (B) are cut to length from $1\frac{1}{2}$ in. wide wood. Both ends are rounded, and at the top ends holes are bored for the thread of the screws which pivot legs and seat together. Bore these holes just a nice size for the thread of the screws to cut its way in. In the middle of the legs bore a hole for the screw which holds both pairs of legs together and enables them to fold up. Now screw parts (A) to (B).

Cut four seat slats to size (D) in Fig. 2.

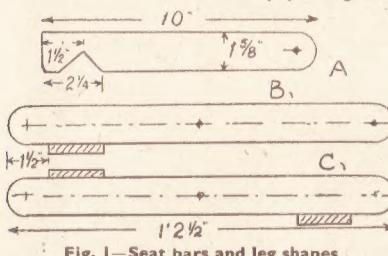
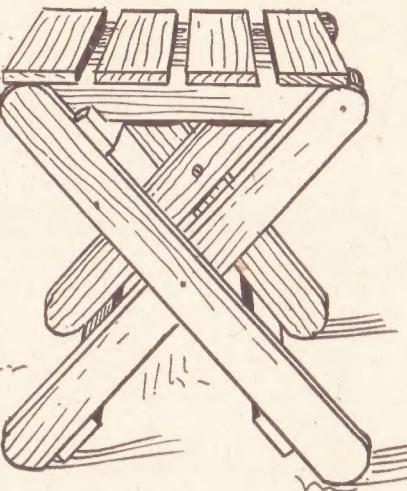


Fig. 1—Seat bars and leg shapes



Lay them together and mark across where the slats come with pencilled lines, spaced $3\frac{1}{2}$ in. apart. Nail these slats across the bars, spacing them $1\frac{1}{2}$ in. apart. Take care to keep both bars parallel during the nailing process. When this is done, fold the seat between the legs, and at $1\frac{1}{2}$ in. from the bottom of the legs screw bar (E) across.

Outer legs (C) can now be cut. These are rounded at each end, and a small hole bored in the centre. Through these

LIST OF TIMBER

Seat bars (2)	— in. by $1\frac{1}{2}$ in. by 10 ins.
Legs (4)	— in. by 1 ins. by 1 ft. 2 ins.
Seat slats (4)	— in. by 2 ins. by 8 ins.
Cross bars (1)	— in. by 2 ins. by 6 ins.
Cross bars (2)	— in. by 2 ins. by 8 ins.

holes drive flat-headed screws, well countersunk, to pivot both pairs of legs securely together. This screw pivoting is shown more clearly in the detail sketch, Fig. 3. Of course, the legs can be pivoted from the outside, in which case round-headed screws can be employed.

In using round-headed screws a thin brass washer can be slipped under the head to ease the action, and lessen friction. It might be a good idea, too, to sandwich a thin washer between the legs to lessen scraping of the surfaces as they are closed and opened.

Now cut two crossbars, like (E), but 8 ins. long. Fold the seat between the inner legs, close the outer legs on them, and then screw one of the bars across the bottom, $1\frac{1}{2}$ ins. up. Turn the whole over and screw the other bar across $1\frac{1}{2}$ ins. down from the top.

Hook Fastener

All being correctly fitted, the legs can now be opened, the seat swung up and dropped down, the notches in its under bar resting on the crossbar of the legs and there catching. It is as well to fit here a simple hook and eye fastener to keep the seat down while in use, otherwise, when lifted up the legs may fall anyhow and need to be straightened out again before the seat can be used.

The hook should be fitted to the outer surface on the crossbar on which the seat rests, and the eye screwed in the end seat slat, underneath, conveniently for the hook to engage in it.

If it is desired to paint or varnish the seat, this should be done before the parts are pivoted together. Do not forget to punch the nails of the seat slats well down, and glasspaper the seat to smoothness, especially the sharp edges of the slats.

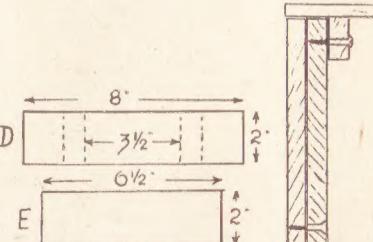


Fig. 2—The seat and cross rail

Fig. 3
Screw pivot

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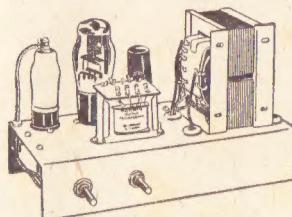
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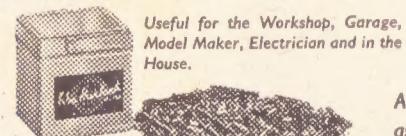
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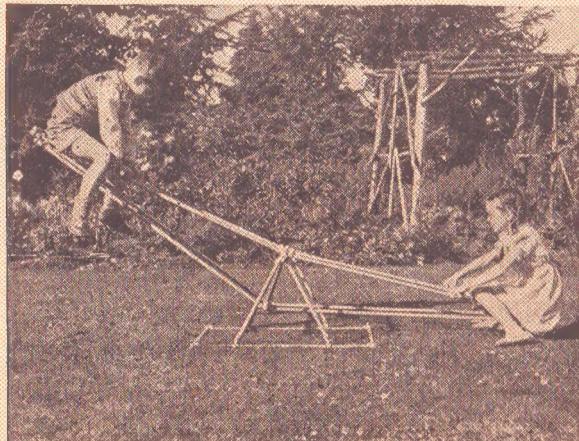
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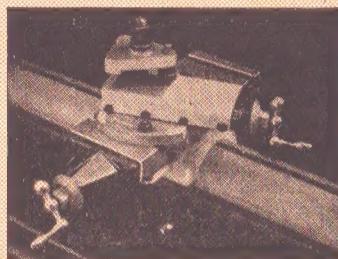
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